NEW VASCULAR PLANT RECORDS FOR THE GRASSLAND BIOME OF CENTRAL NORTH AMERICA

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ABSTRACT

Additions to the vascular floras of four states are reported herein: Colorado (Calibrachoa parviflora, Chamaesyce prostrata, Gleditsia triacanthos, Oenothera engelmannii, Oenothera laciniata, Trianthema portulacastrum, and Veronica persica); Iowa (Deschampsia danthonioides); Kansas (Alternanthera caracasana, Carex albicans var. australis, Carex swanii, Carum carvi, Catharanthus roseus, Cyperus diandrus, Dichanthelium dichotomum subsp. dichotomum, Dichanthelium polyanthes, ×Elyhordeum montanense, Erigeron canus, Geranium dissectum, Geranium molle, Hibiscus syriacus, Phyllanthus urinaria subsp. urinaria, Pyrus calleryana, Sagina apetala, Sedum sarmentosum, Silphium radula, and Tridens flavus var. chapmanii); and Oklahoma (Epilobium leptophyllum).

RESUMEN

Se hacen adiciones a la flora vascular de cuatro estados: Colorado (Calibrachoa parviflora, Chamaesyce prostrata, Gleditsia triacanthos, Oenothera engelmannii, Oenothera laciniata, Trianthema portulacastrum, y Veronica persica); Iowa (Deschampsia danthonioides); Kansas (Alternanthera caracasana, Carex albicans var. australis, Carex swanii, Carum carvi, Catharanthus roseus, Cyperus diandrus, Dichanthelium dichotomum subsp. dichotomum, Dichanthelium polyanthes, ×Elyhordeum montanense, Erigeron canus, Geranium dissectum, Geranium molle, Hibiscus syriacus, Phyllanthus urinaria subsp. urinaria, Pyrus calleryana, Sagina apetala, Sedum sarmentosum, Silphium radula, y Tridens flavus var. chapmanii); y Oklahoma (Epilobium leptophyllum).

Continuing field and herbarium studies in the grassland biome of central North America have produced additional records of vascular plants previously undocumented in parts of the region. Herein we report 28 new state records for vascular plants in Colorado (7), Iowa (1), Kansas (19), and Oklahoma (1). Thirteen of these reports are considered to be native occurrences in the region; fifteen (marked with an asterisk) are considered the results of recent introduc-

tions. These reports update the distribution data contained in *Atlas of the Flora of the Great Plains* (Great Plains Flora Association 1977) and *Flora of the Great Plains* (Great Plains Flora Association 1991). All voucher specimens are deposited in the R. L. McGregor Herbarium (KANU), University of Kansas, unless otherwise indicated.

*Alternanthera caracasana Kunth (Amaranthaceae). Native to South and Central America, mat chaff-flower has been reported from throughout the southern U.S. (Kartesz & Meacham 1999). Previous reports record this species from the panhandle of Texas and Oklahoma (Great Plains Flora Association 1991). A single specimen confirms its presence in Kansas.

Voucher specimen: **KANSAS. Douglas Co.:** Lawrence, University of Kansas Campus, T12S, R20E, sec 36, SW ¹/4, SE ¹/4, near 38°57′29″N, 95°14′54″W, elev 305 m, weedy plantings and sidewalk cracks on campus, 30 Aug 2002, *Morse* 8534.

*Calibrachoa parviflora (Juss.) D'Arcy (Solanaceae). This prostrate annual occurs throughout the southern U.S. and tropical America and is probably a recent introduction into the Great Plains. Freeman et al. (1998) reported it from central Kansas. Two populations were discovered in eastern Colorado in 2000, both along the shorelines of reservoirs.

Voucher specimens: **COLORADO. Bent Co.:** Las Animas, 12 mi N, Adobe Creek Reservoir State Wildlife Area, SE side of Adobe Creek Reservoir, T21S, R52W, sec 4, E¹/2, SE¹/4, elev 4,140 ft, level, grazed, shortgrass prairie and muddy to sandy shoreline, 26 Jun 2000, *Freeman 15345 & Morse.* **Kiowa Co.:** Eads, 10 mi S, 4.5 mi E, Neenoshe Reservoir, S side, T20S, R47W, sec 9, SW ¹/4, SW ¹/4 & sec 16, N ¹/4, elev 3,930 ft, open, sandy to muddy shoreline and adjacent, wooded perimeter of reservoir, 20 Aug 2000, *Freeman 15982 & Morse.*

Carex albicans Willd. ex Spreng. var. australis (L.H. Bailey) Rettig (Cyperaceae). Rettig (1990) recognized three varieties of *C. albicans*. Variety *albicans* occurs in the Great Plains from eastern Nebraska south through eastern Kansas and into central Oklahoma (Rolfsmeier & Wilson 1997; Taylor & Taylor 1994; Yatskievych 1999). Recently, a population of approximately 100 individuals clearly referable to var. *australis* was discovered in southeast Kansas in a sandy, oak woodland. The nearest documented populations in Arkansas (Hyatt 1998) and Missouri (Yatskievych 1999) are more than 250 km away.

Voucher specimens: **KANSAS. Neosho Co.**: Thayer, 0.5 mi W, Thayer City Lake, N side, 37°29′01″N, 95°29′13″W, post oak-blackjack oak woodland on sandstone, gentle S-facing slope with a few mesic ravines, 17 Apr 2001, *Freeman 16776*.; Thayer, 0.5 mi W, N side Thayer City Lake, T29S, R18E, sec 31, NW ¹/4, NW ¹/4, elev 305 m, mowed parkland, picnic area, and open blackjack oak-post oak forest, soil sandy, 23 Apr 2001, *Morse 5486 & W. Michener*.

Carex swanii (Fernald) Mack. (Cyperaceae). *Carex swanii* is broadly distributed throughout the eastern U.S. and southeastern Canada. A small population recently discovered in eastern Kansas extends the range of this species by more than 300 km from the nearest known stations in central Arkansas (Hyatt 1998) and southeastern Missouri (Yatskievych 1999).

Voucher specimen: **KANSAS. Douglas Co.:** Junction of US Hwy 56 and Co Rd 1055 in Baldwin City, 3 mi N, 2.25 mi E, T14S, R20E, sec 13, S ¹/₂, SW ¹/₄, near 38°49'30"N, 95°08'30"W, elev ca 290 m, open, black-post-blackjack oak forest and upland tallgrass prairie on N- and W-facing slopes, surfacing sandstone, sandy soil, 27 Jun 2002, *Morse* 8383. [Additional voucher at MICH]

*Carum carvi L. (Apiaceae). Caraway is a Eurasian biennial that has become established sporadically in waste places in the northern Great Plains (Great Plains Flora Association 1991). The species now is added to the Kansas flora based on a population recently discovered in the extreme eastern part of the state.

Voucher specimen: **KANSAS. Miami Co.**: Somerset, 1 mi E, T17S, R24E, sec 3, SW ¹/₄, NW ¹/₄, near 38°36'00"N, 94°45'00"W, elev 275 m, weedy floodplain forest and rocky gravel bars along S side South Wea Creek, 5 Oct 2000, *Morse 5186*.

*Catharanthus roseus (L.) G. Don (Apocynaceae). A native of the Old World tropics, rosy periwinkle has been planted extensively as an ornamental in the U.S. Kartesz and Meacham (1999) mapped records from scattered states in the southern U.S. Recent observations and a single collection confirm the presence of *C. roseus* as an adventive species in Kansas.

Voucher specimen: **KANSAS. Douglas Co.**: Lawrence, University of Kansas Campus, T12S, R20E, sec 36, SW ¹/4, SE ¹/4, near 38°57'29"N, 95°14'54"W, elev 305 m, weedy plantings and sidewalk cracks on campus, 30 Aug 2002, *Morse* 8533.

Chamaesyce prostrata (Aiton) Small (Euphorbiaceae). Prostrate mat-spurge is a common annual in the southern half of the Great Plains. Kansas and Nebraska records occur westward to the Colorado border (Great Plains Flora Association 1977), but there are no records for that state. It now may be included based on a single collection from extreme east-central Colorado.

Voucher specimen: **COLORADO. Kit Carson Co.:** Burlington, 3 mi E along US 24, T8S, R43W, sec 35, NW $^{1}/_{4}$, NW $^{1}/_{4}$, elev 4,010 ft, disturbed, open roadside just S of I-70 overpass, soil silty, 18 Aug 2000, *Freeman 15764 & Morse.*

Cyperus diandrus Torr. (Cyperaceae). Cyperus diandrus is confined to the extreme eastern Great Plains (Great Plains Flora Association 1977) except in Nebraska, where it is fairly widespread (Rolfsmeier 1995). In far western Missouri, Yatskievych (1999) mapped records from Jackson and Dade counties. Previous reports of the species in Kansas (Gates 1940) were based on misidentified specimens of the superficially similar *C. bipartitus* Torr. The species now may be included in the Kansas flora based on an overlooked specimen collected 40 years ago. Several recent attempts to relocate this population have been unsuccessful.

Voucher specimen: **KANSAS. Atchison Co.**: Mouth of Independence Creek, 28 Jul 1961, *Blocker* 789 [KSC].

*Deschampsia danthonioides (Trin.) Munro ex Benth. (Poaceae). This tiny annual, native to western North America and South America (Cronquist et al. 1977),

has been reported as adventive in Ohio, New York, and Maine (Kartesz & Meacham 1999). The first record from Iowa, where it apparently was a contaminant in grass seed, is reported here. The site has been revisited several times, but there is no evidence that plants have persisted.

Voucher specimen: IOWA. **Bremer Co.:** Waverly, S edge of town, T91N, R14W, sec 10, SE 1 /4, SE 1 /4, 42°42′03″N, 92°28′34″W, elev 990 ft, small area of reseeded lawn on W side of US 218 at 2416 4th Street SW, exposed, loamy soil, 6 Jul 2001, *Freeman 17518*.

Dichanthelium dichotomum (L.) Gould subsp. **dichotomum** (Poaceae). Dichanthelium dicotomum is known from several counties in extreme western Missouri (Yatskievych 1999), but has not been reported from Kansas. Recent examination of specimens at KANU revealed a single specimen misidentified as *D. acuminatum* (Sw.) Gould & Clark var. fasciculatum (Torr.) Freckmann, which represents the first verified record for the state.

Voucher specimen: **KANSAS. Franklin Co.:** I mi E, 3 mi S Homewood, ridge of N-facing cliffs above small stream on W side of road, plants in sandy soil, dry, 20 Aug 1976, *Brooks* 12447.

Dichanthelium polyanthes (Schult.) Mohlenbr. (Poaceae). Kartesz and Meacham (1999) mapped records of this taxon, as *D. sphaerocarpon* (Ell.) Gould var. *isophyllum* (Scribn.) Angelo, from throughout the eastern U.S., westward to Missouri, Oklahoma, and Texas. For its part, *D. sphaerocarpon* is common in eastern Kansas, but no attempt has been made to distinguish the other members of the complex to which that species belongs. Recent examination of Kansas specimens identified as *D. sphaerocarpon* at KANU revealed a single specimen of *D. polyanthes*, which represents the first verified record for the state.

Voucher specimen: **KANSAS. Cherokee Co.:** 3.5 mi E Crestline, moist open woodland, 22 Jul 1982, *McGregor* 33433.

×**Elyhordeum montanense** (Scribn.) Bowden (Poaceae). This naturally occurring hybrid between *Elymus virginicus* L. and *Hordeum jubatum* L. subsp. *jubatum* has been reported from nearly a dozen states and provinces in the U.S. and Canada (Kartesz & Meacham 1999). A recently redetermined specimen at KANU is the first record for Kansas.

Voucher specimen: **KANSAS. Republic Co.:** T4S, R2W, sec 28, elev 1,380 ft, silty clay loam, 25 Aug 1995, *Elliott 1162*.

Epilobium leptophyllum Raf. (Onagraceae). *Epilobium leptophyllum* is an herbaceous perennial found in fens, marshes, and seeps throughout the northern and central Great Plains (Great Plains Flora Association 1991), occurring southward to Meade County, Kansas (Great Plains Flora Association 1977). A small population discovered in extreme western Oklahoma, on a seepy, open slope near the Ogallala-Doxey contact is 180 km south-southeast of the southernmost Kansas population.

Voucher specimen: OKLAHOMA. **Roger Mills Co.**: Cheyenne, 3.5 mi S, 4 mi W, Thurmond Ranch, T12N, R24W, sec 4, NE ¹/4, 35°32′51″N, 99°44′27″W, elev 2,260-2,300 ft, gently rolling sandsage prai-

rie and mixed-grass prairie with abundant oak mottes, small pond at upper reaches of Sergeant Major Creek, Tertiary Ogallala Formation, 3 Oct 2001, Freeman 18359 & Morse.

Erigeron canus A. Gray (Asteraceae). Hoary fleabane grows on rocky, shortgrass prairies in the High Plains from South Dakota and Wyoming, south to New Mexico. Examination of specimens at KANU revealed plants misidentified as *E. pumilus* Nutt., including six from extreme northwestern Kansas, which represent the first verified records of the species from the state.

Voucher specimens: **KANSAS.** Cheyenne Co.: St. Francis, 12 mi N, 12 mi W, upland prairie pasture, top of sandrock ledge, thin soil, 9 Jun 1967, *Stephens 11449 & Brooks*; St. Francis, 12 mi N, 12 mi W, high prairie, hilltop, dry, rocky, gravel soil, 4 Jun 1969, *Stephens 31383 & Brooks*; St. Francis, 12 mi N, 12 mi W, top of rocky, prairie hill, 5 Jun 1981, *Stephens 90302*. **Rawlins Co.:** Atwood, 8 mi SW, dry rocky prairie ridge, 27 Jun 1954, *McGregor 9449*; Beardsley, 3.5 mi S, gravelly prairie hillside, 22 May 1975, *Brooks 9662*; McDonald, ca 11 mi S, 6 mi E, T5S, R35W, sec 7, E \(^1/2\) & sec 8, W \(^1/2\), elev 3,200–3,300 ft, N-S trending canyon that joins Beaver Creek to the N, grazed, upland, shortgrass prairie, extensive outcrops of Ogallala Formation in the area, 30 May 1991, *Freeman & Brooks 3516*.

*Geranium dissectum L. (Geraniaceae). Geranium dissectum is a native of Europe now established throughout the eastern and western U.S. and Canada (Gleason & Cronquist 1991; Kartesz & Meacham 1999). A single record confirms its presence in Kansas.

Voucher specimen: **KANSAS. Labette Co.:** Parsons, E side, open grassy area by Labette Creek along US 160, 7 May 1998, *Holland* 9312.

*Geranium molle L. (Geraniaceae). Dove-foot crane's-bill is a native of Europe and western Asia (Gleason and Cronquist 1991). It is now a widespread weed in the eastern and western U.S. (Kartesz & Meacham 1999), but records from the Great Plains are rare. A specimen recently was found at KANU among 80 specimens of *G. pusillum* L. and is the only record for Kansas.

Voucher specimen: **KANSAS. Wilson Co.**: Fredonia, 6 mi N, 4 mi W, T28S, R14E, sec 7, SE $^1/_4$, SE $^1/_4$, near old farm house in scrub oak woods, 12 Jun 1995, *McGregor* 41124.

*Gleditsia triacanthos L. (Fabaceae). Common honey-locust is native to the eastern U.S., apparently occurring naturally westward to central Nebraska and Kansas (Great Plains Flora Association 1977, 1991). However, its native range in the Great Plains has been obscured by its long history of cultivation as a shade tree and in windbreaks and fencerows. The species was not included in the Colorado flora by Weber and Wittmann (1992), but KANU now has two specimens of this tree from the eastern part of the state. Both records are presumably the result of introductions in recent decades.

Voucher specimens: **COLORADO. Kit Carson Co.:** Flagler, 3.5 mi E, Flagler State Wildlife Area, elev 4,710–4,770 ft, rocky, shortgrass prairie on the W side of Flagler Lake, 14 May 2000, *Freeman 14319.* **Yuma Co.:** Beecher Island, 3.5 mi S, dry prairie hillside pasture, 18 Jun 1966, *Stephens 4871.*

*Hibiscus syriacus L. (Malvaceae). A native of east Asia, Rose-of-Sharon is widely planted in the U.S., occasionally escaping from cultivation (Gleason & Cronquist 1991). Kartesz and Meacham (1999) mapped records from throughout the east-

ern U.S. and in Utah. Steyermark (1977) reported the species as rarely escaping in Missouri. In the Great Plains, *H. syriacus* of ten persists after cultivation, but escaped plants have not been recorded in our region. A plant discovered in eastern Kansas appears not to have been planted.

Voucher specimen: **KANSAS. Douglas Co.:** Lawrence, T13S, R19E, sec 12, NW 1 /4, NW 1 /4, NE 1 /4, 38°56'39"N, 95°15'01"W, elev 255 m, weedy forest edge along Naismith Creek, 7 Sep 2001, *Morse* 7322.

Oenothera engelmannii (Small) Munz (Onagraceae). Harrington (1954) included Engelmann's evening-primrose in his flora of Colorado; however, Weber and Wittmann (1992) excluded it because the voucher for the report was misidentified. A specimen at KANU confirms that the species occurs in Colorado.

Voucher specimen: **COLORADO**. **Baca Co.**: Ca 8 mi W of Elkhart, KS, on the W side of Morton County Rd B along the KS-CO border, S of the Cimarron River, T35S, R41W, sec 10, NE $^1/_4$, SE $^1/_4$, elev 3,610-3,620 ft, grazed, upland, rolling, sandsage prairie, soil sandy, 2 Jun 1989, *Freeman* 3023.

Oenothera laciniata Hill (Onagraceae). Weber and Wittmann (1992) stated that cut-leaf evening-primrose must occur in eastern Colorado based on nearby collections from Kansas, Nebraska, and Oklahoma. This species may be added to the Colorado list based on a collection from the extreme southeast part of that state.

Voucher specimen: **COLORADO**. **Baca Co.**: Ca 8 mi W of Elkhart, KS, on the W side of Morton County Rd B along the KS-CO border, S of the Cimarron River, T35S, R41W, sec 10, NE $^{1}/_{4}$, SE $^{1}/_{4}$, elev 3,610-3,620 ft, grazed, upland, rolling, sandsage prairie, soil sandy, 2 Jun 1989, *Freeman* 3024.

*Phyllanthus urinaria L. subsp. urinaria (Euphorbiaceae). A native of tropical east Asia, peewater leaf-flower was first documented in North America in 1944 (Webster 1970). The species is now established in the southeastern U.S. and Illinois (Kartesz & Meacham 1999), where it is probably more common than herbarium records suggest (Sundell 1986). Two recent collections confirm the presence of this species in southeast Kansas.

Voucher specimens: **KANSAS. Neosho Co.:** Chanute, S edge in Holiday Park, 29 Sep 1997, Holland 9286; St. Paul, near new Farmers National Bank, 2 Oct 1997, Holland 9289.

*Pyrus calleryana Decne. (Rosaceae). A native of China, Bradford pear is widely cultivated as an ornamental tree in the U.S. Kartesz and Meacham (1999) mapped records from more than a dozen states in the central, southeast, and south-central U.S. Cultivated plants often persist after abandonment in the Great Plains, and field observations suggest that the species has escaped in Kansas more frequently than herbarium records indicate. A collection from the eastern part of the state comes from a tree that appears not to have been under prior cultivation.

Voucher specimen: **KANSAS. Douglas Co.:** Lawrence, SE edge. Baker Wetlands, just W pull-in on N side of site, T13S, R20E, sec 18, NE $^1/_4$, NW $^1/_4$, 38°55'40"N, 95°14'00"W, elev 250 m, weedy woodland along edge of wetland, 16 Nov 2000, *Morse 5289, Freeman & Loring*.

*Sagina apetala Ard. (Caryophyllaceae). Crow (1978) mapped this diminutive, introduced annual from along the west coast of the U.S. and at several widely scattered sites in the southeast. Examination of KANU specimens recently revealed two overlooked specimens of hairy-leaf pearlwort from Kansas.

Voucher specimens: **KANSAS. Leavenworth Co.:** US 24 highway at Basehor, sandy, gravelly soil around roadside pull-off, exposed, 4 May 1983, *Brooks 16545*; US 24 at Basehor, roadside pull-off area, gravelly disturbed site, 8 Jun 1983, *Brooks 16638*.

*Sedum sarmentosum Bunge (Crassulaceae). Stringy stonecrop is a succulent ornamental native to China (Gleason & Cronquist 1991). Escaped plants have been documented in most states east of the Great Plains (Kartesz & Meacham 1999). A small population recently discovered in eastern Kansas is the first record for the state.

Voucher specimen: **KANSAS**. **Miami Co.**: Beagle, 2.5 mi N, 2 mi E, T18, R22E, sec 25, S ¹/₂, NE ¹/₄, 38°27'22"N, 94°15'15"W, elev 275 m, grazed woodland along trail to S end of tallgrass prairie site, 28 May 2001, *Morse 5856 & Michener*.

Silphium radula Nutt. (Asteraceae). A member of the taxonomically difficult *Silphium integrifolium* Michx. complex, rough-stem rosinweed is reported from scattered populations throughout the southeastern U.S. (Kartesz & Meacham 1999). Previously reported in the Great Plains from Oklahoma and Texas (Great Plains Flora Association 1991), this species has been confirmed in southeast Kansas based on a single collection.

Voucher specimen: **KANSAS. Neosho Co.:** Erie, 0.25 mi S, 5 mi E, along old MKT RR right of way, 17 Jul 2000, *Holland* 9959.

*Trianthema portulacastrum L. (Aizoaceae). Desert horse-purslane is an introduced species known from widely scattered collections in the southern Great Plains (Great Plains Flora Association 1977, 1991). Three collections were made in 2000 in Kiowa County, Colorado, representing the first records for that state.

Voucher specimens: **COLORADO. Kiowa Co.**: Eads, 8.5 mi S, 4 mi E, Neenoshe Reservoir, NW side, T20S, R47W, sec 6, NE ¹/4, elev 3,930 ft, shortgrass prairie immediately W of the reservoir and open to wooded shoreline, 16 May 2000, *Freeman 14545*; Eads, 10 mi S, 4.5 mi E, Neenoshe Reservoir, S side, T20S, R47W, sec 9, SW ¹/4, SW ¹/4 & sec 16, N ¹/2, elev 3,930 ft, open, sandy to muddy shoreline and adjacent, wooded perimeter of reservoir, 20 Aug 2000, *Freeman 15983 & Morse*; Eads, 8.5 mi S, 4 mi E, Neenoshe Reservoir, NW side, T20S, R47W, sec 6, NE ¹/4, elev 3,930 ft, shortgrass prairie immediately W of the reservoir and open to wooded shoreline, 20 Aug 2000, *Freeman 16037 & Morse*.

Tridens flavus (L.) Hitchc. var. **chapmanii** (Small) Shinners. (Poaceae). *Tridens flavus* is broadly distributed throughout the eastern U.S., westward through Wisconsin and southward to New Mexico. Variety *flavus* occurs in the Great Plains from southeastern Nebraska, southward through eastern Kansas and into Oklahoma (Great Plains Flora Association 1977). Variety *chapmanii* has been reported from Oklahoma (Kartesz & Meachem 1999). Recent examination of specimens from southern Kansas revealed that this variety also occurs in the state.

Voucher specimens: **KANSAS.** Chautauqua Co.: Sedan, 1.5 mi NE, open blackjack oak woods, hillside, dry rocky sandstone soil, 18 Oct 1969, *Stephens* 37321; Chautauqua, 1 mi S, 1.5 mi E, low woods along small stream, soil sandy, moist, 14 Oct 1976, *Brooks* 12832. **Cowley Co.:** Winfield, 7 mi W, sandy prairie, 3 Sep 1966, *Koch* 2100.

*Veronica persica Poir. (Scrophulariaceae). Though bird-eye speedwell was overlooked in the Flora of the Great Plains (Great Plains Flora Association 1991), Freeman et al. (1998) reported this introduced annual from Iowa, Kansas, Nebraska, South Dakota, and Wyoming in the Great Plains. According to Weber and Wittmann (1992), previous reports of *V. persica* in Colorado were based on misidentified specimens of *V. polita* Fr. However, a recent collection in eastern Colorado confirms the presence of this species in the state.

Voucher specimen: **COLORADO**. **Cheyenne Co.:** Cheyenne Wells, S side of town, T14S, R44W, sec 20, $NW^1/4$, $SE^1/4$, elev 4,260 ft, rest area along US 40 and adjacent Cheyenne County Fairgrounds, well-watered grass in outfield of ball diamond, 2 Oct 2000, *Freeman 16705*.

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